



The Model of Online Teaching and Active Learning Skills of Vocational Students in Chongqing City, China

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Abstract

This research consists purposes were 1. to study online teaching and active learning skills of vocational students in Chongqing city, China 2. to Create the model of online teaching and active learning skills of vocational students in Chongqing city, China and 3. to evaluate the model of online teaching and active learning skills of vocational students in Chongqing city, China. This research was a mixed-methods study. A sample of 384 students from vocational colleges in Chongqing, who frequently use online teaching resources in their practical work, was selected. The qualitative analysis was used the research instruments included questionnaires and semi-structured interviews with 12 experts. The results of the research were as follows 1) The participation in online teaching was distributed in a spindle shape. The second-year students were suitable for the “online theory + offline tutoring” mixed model, and the third-year students needed an elastic learning design. Technology and platform support are the core factors driving active learning and skill improvement 2) Student personal factors, course and teaching design, teacher support, learning environment and external support also play important roles. Through expert interviews, the model structure was confirmed to be clear, feasible and applicable, and was highly recognized especially in terms of teaching organization, teacher empowerment and technical support and 3) Expert evaluation showed that the model performed outstandingly in terms of feasibility and applicability, but still had deficiencies in aspects such as the "behavior-knowledge-skill" dynamic transformation mechanism. The effectiveness of the technical infrastructure and the sustainability of some practical measures need to be further verified.

Keywords: Online Teaching, Active Learning Skills, Vocational College Students



Introduction

With the development of information technology, online teaching has become one of the important teaching methods in vocational education. Especially under the background of “Internet + Education”, vocational colleges have adopted various digital teaching methods such as online courses, MOOCs, SPOCs, virtual simulation training, and smart classrooms to enhance the flexibility and resource sharing of teaching. (Yin D., 2015) However, there are still many challenges in the learning effect of vocational college students under the online teaching mode. Firstly, the current online teaching is more inclined to imparting knowledge, and the skills training is relatively weak. Compared with traditional classroom teaching, online teaching requires students to have stronger self-discipline and autonomous learning ability. (Lu X.,N, & Gao X., W., 2023) However, many vocational college students lack good learning habits and time management skills, resulting in poor online learning outcomes. Secondly, the interactivity and practicality of online teaching are relatively weak. Especially for vocational education that focuses on the cultivation of practical abilities, relying solely on online courses for skill training has certain limitations. (Tang S.,J., 2015) Thirdly, the learning motivation of vocational college students is influenced by multiple factors, such as the design of course content, teaching methods of teachers, and support from the learning environment. In the traditional teaching mode, teachers can enhance students' learning interest through classroom interaction and practical guidance. However, in the online teaching environment, the lack of a learning atmosphere may further reduce students' learning engagement. Therefore, how to strengthen the influence of online teaching on students in higher vocational colleges and improve their learning initiative and skill mastery is an urgent problem to be solved in online education in higher vocational colleges. (Guo F.,C, and Liang S., 2025)

The core goal of vocational education is to cultivate high-quality technical and skilled talents, which requires students to not only master the corresponding theoretical knowledge but also possess solid practical operation skills. However, in the online teaching environment, the transmission and acquisition of skill knowledge still face many challenges. Firstly, the current online teaching mode is more inclined towards knowledge transmission, while the skill training aspect is relatively weak. Online courses mainly rely on videos, courseware, and quizzes for theoretical teaching, while skill learning often requires the combination of practical operation, experimental training, and enterprise practice. (Li, M. , 2020) Although some vocational colleges have attempted to introduce new teaching methods such as virtual simulation technology and remote experimental platforms, their teaching effects are still limited by factors such as technical conditions and students' practical opportunities. (Wu S., Guo Qingzhi., 2019) Secondly, in the process of skill learning, vocational college students often need to continuously optimize their skill mastery through repeated practice, teacher guidance, and peer



communication. However, in the online environment, the lack of face-to-face interaction and immediate feedback makes it difficult for students to receive effective guidance when encountering problems, thereby affecting the construction of skill knowledge. Thirdly, there are differences in information literacy and autonomous learning ability among vocational college students, and the utilization of online learning resources also varies among different students, further exacerbating the imbalance in the acquisition of skill knowledge.

The Purposes

1. To study online teaching and active learning skills of vocational students in Chongqing city China.
2. To Create the model of online teaching and active learning skills of vocational students in Chongqing city China.
3. To evaluate the model of online teaching and active learning skills of vocational students in Chongqing city China.

Literature Review

2.1 Definition of Online Teaching: Online teachings also known as network teaching or remote teaching. It refers to an educational form where teachers and students utilize the internet information technology platform to conduct teaching and learning activities across geographical boundaries through digital resources and tools. (Bozkurt & Sharma, 2020) This model often includes real-time video conferencing (such as Zoom or Microsoft Teams) as well as asynchronous learning resources such as online course management systems.

2.2 Active Learning Skills: John Dewey (John Dewey, 1916) proposed the concept of "learning by doing", emphasizing that learning should be conducted through practice and experience, and students should actively participate in the learning process rather than passively accept knowledge. This idea laid the foundation for the theory of active learning skills. proposed "discovery learning", highlighting the importance of learners' initiative and curiosity in knowledge acquisition. Dewey, J. (1916).

2.3 Chongqing city: The majority of vocational college students in Chongqing city come from rural areas or economically underdeveloped regions, with diverse family backgrounds and relatively weak learning foundations. (Li M, 2020) These students often exhibit lower learning initiative and self-regulation abilities in traditional classrooms, but show higher interest and adaptability in information technology application (Wang H, 2019). Their professional identity is not high. Professional identity affects students' learning enthusiasm and career development. (Huang Xue, Li Dandan, and Liao Meiji, 2024) research indicated that vocational college students in Chongqing city generally have problems such as insufficient learning motivation, weak self-regulation



ability and difficulties in adapting to technology during online learning (Liu Yang, 2021). The learning motivation and self-regulation ability of students are generally low, resulting in poor online learning outcomes. (Wang Li, 2020)

Methodology

1. Population and sample groups in the research include: Population, 330,000 students from 44 vocational colleges in Chongqing focused on studying online learning behaviors; 22,000 full-time teachers focused on online teaching and educational reform experiences; technical personnel: 50 platform operation and educational technology experts. The sample was drawn using stratified random sampling from 9 public colleges; using the Craigie and Morgan formula, it was determined that the minimum sample size should be ≥ 384 people to ensure representativeness.

2. Research tools include: Questionnaire survey, using the Likert scale to collect data on students' motivation, autonomous learning ability, and technology acceptance. Experimental control, comparing the impact of different teaching models on learning outcomes. Statistical analysis, using SPSS or AMOS for regression analysis and structural equation modeling to identify key influencing factors. Model evaluation, 12 experts evaluated the model from four dimensions: utility, feasibility, uniqueness, and accuracy, with a threshold of $\geq 70\%$. Qualitative design, semi-structured interviews, conducting in-depth interviews with teachers and technical managers to optimize teaching model design. Classroom observation, recording students' online interaction behaviors and learning paths. Focus groups, organizing discussions among teachers and technical managers to improve strategies. By cross-validating the quantitative statistical results with the qualitative findings, a closed-loop research logic is formed to ensure the reliability of the conclusions.

3. Data Collection: Questionnaire survey, using the Likert scale to collect data on students' motivation, autonomous learning ability, and technology acceptance. Classroom observation, recording students' online interaction behaviors and learning paths. Focus groups, organizing discussions among teachers and technical managers to improve strategies. By cross-validating the quantitative statistical results with the qualitative findings, a closed-loop research logic is formed to ensure the reliability of the conclusions.

4. Data Analysis: Experimental control, comparing the impact of different teaching models on learning outcomes. Statistical analysis, using SPSS or AMOS for regression analysis and structural equation modeling to identify key influencing factors. Model evaluation, 12 experts evaluated the model from four dimensions: utility, feasibility, uniqueness, and accuracy, with a threshold of $\geq 70\%$. Qualitative design, semi-structured interviews, conducting in-depth interviews with teachers and technical managers to optimize teaching model design.



5. Statistical used in research: This study extensively collected quantitative data through questionnaire surveys, and supplemented it with in-depth interviews to conduct a thorough exploration. This approach ensures the comprehensiveness and reliability of the research results. Statistical analysis, using SPSS or AMOS for regression analysis and structural equation modeling to identify key influencing factors. Qualitative design, semi-structured interviews, conducting in-depth interviews with teachers and technical managers to optimize teaching model design. Classroom observation, recording students' online interaction behaviors and learning paths. Focus groups, organizing discussions among teachers and technical managers to improve strategies.

Results

This Research The researcher can classify the research results as follows

1. Result of studying online teaching and active learning skills of vocational students in Chongqing city, China.

The overall structure of online teaching participation is in a spindle shape, indicating that the participation situation is generally healthy. From the perspective of professional categories, the participation rates in engineering and art design are relatively low. This suggests that professional fields with strong theoretical content and low practical requirements are more suitable for a high proportion of online teaching. There are certain high online participation phenomena in engineering and art-related majors, which require vigilance against the risk of "weakening of practical components". From the perspective of grade, the proportion of sophomore students is the highest, followed by freshmen and junior students in sequence. Sophomore students are suitable for the mixed model of "online theory + offline tutoring"; junior students, due to the pressure of internships and employment, need flexible learning design. The intersection of gender and major shows that boys are more distributed in engineering, and there are significant differences in online learning preferences: girls tend to structured learning, while boys prefer autonomous exploration. The teaching design needs to pay attention to gender differences.

The questionnaire has reached the standard of reliability and validity, and there is no problem of multicollinearity. The analysis shows that the technical platform support is the core driving force affecting active learning, knowledge acquisition, and skill improvement; the learning environment and external support are key catalysts, helping with knowledge application and skill transformation; students' personal behavior is the foundation of active learning; course design promotes the systematic construction of knowledge; teacher support significantly promotes the transformation of knowledge into skills, and its role in the skill stage is 37% higher than that in the knowledge stage.

The three-dimensional dependent variable relationship analysis indicated that active learning behavior had a strong driving force for skill improvement and was an effective leverage point for educational intervention; there was a bidirectional enhancement cycle between knowledge acquisition and skill improvement, but there were differences in the conversion efficiency of “behavior - knowledge – skill”, and the reverse feedback effect of skills on knowledge was underestimated. Overall, current online teaching has achieved remarkable results in structural design and environmental support, but still needs to strengthen in practical teaching, student motivation stimulation and skill conversion mechanism. The final theoretical framework relationship diagram is as follows:

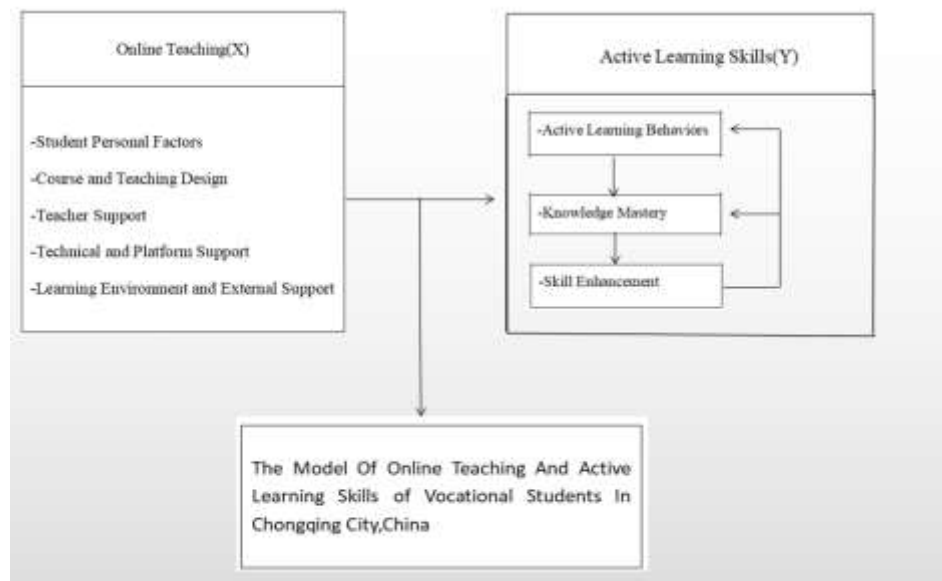


Figure 1 The Result Conceptual Framework (Qin Zhong, 2025)

2. Result of creating the model of online teaching and active learning skills of vocational students in Chongqing city, China.

The results of the semi-structured interviews were explained from five dimensions. Optimization of the structure of online teaching, the mechanism for enhancing students' learning motivation, innovative teaching methods for teachers, the functional design of technicians, the mechanism of the dynamic transformation from behavior to knowledge and then to skills.

Based on the perspectives of multiple experts, systematically proposed optimization strategies and theoretical models for online teaching in higher vocational education. At the macro level, a “virtual-real integration, flexible and diverse” teaching system should be constructed. For practical majors such as engineering and art, a “virtual simulation + project-driven” mixed model should be established. Through



technologies like VR/AR, the lack of practice can be compensated for, and modular courses, credit banks, and personalized learning paths can be relied on to enhance flexibility.

From the perspective of educational theory, it emphasizes reconstructing the “knowledge-action integration” path through situational learning and action-oriented approaches. Through real projects, task chains design, and continuous feedback mechanisms, knowledge can be transformed into skills. At the same time, the evaluation system should be reformed to significantly increase the weight of process skills assessment.

In terms of frontline teaching practice, “single platform main body, multiple tools collaboration” is recommended to reduce operational burdens. The use of learning groups for mutual assistance, game-based mechanisms, and AI tools can enhance participation and self-discipline. Emphasis is also placed on emotional interaction and process motivation.

The technical platform needs to focus on developing virtual simulation and remote real-operation functions. A learning behavior analysis model should be established for precise intervention, and the integration and user experience should be optimized.

Theoretical verification indicates that active learning behavior is a key lever for skill improvement, with a stronger driving force than knowledge acquisition. There is a two-way enhancement cycle between knowledge acquisition and skill improvement, but the reverse effect of skills on knowledge is underestimated. There are differences in the “behavior-knowledge-skill” transformation path, suggesting that an efficient path of skipping knowledge and directly cultivating skills can be explored.

In summary, it is necessary to integrate the efforts of educational theory, teaching practice, and technical platforms to jointly solve the problems of “knowing but not doing” and “high investment but low conversion”, and build an effective online education ecosystem that supports ability cultivation.

The model focuses on optimizing the structure and enhancing the capabilities of online teaching in higher vocational education in Chongqing. It systematically builds a multi-level support system. Through “professional hierarchical teaching” and “grade flexibility design”, differentiated teaching organization is achieved; relying on infrastructure investment, teacher training reform and curriculum innovation, teaching theories and learning science are integrated, and internal and external driving forces are coordinated. Teachers promote classroom transformation through role redefinition, empowering students and data-driven teaching, while the technical team supports platform intelligence with user experience, built-in tools and skill assessment. Ultimately, the model focuses on the dynamic transformation of “behavior - knowledge - skills”, emphasizes the feedback of skills on knowledge, innovates the evaluation mechanism, establishes an “experiential knowledgeization” channel, and aims to achieve the goal of high-quality online education that integrates knowledge and action.



3. Result of evaluating the model of online teaching and active learning skills of vocational students in Chongqing city, China.

The expert team conducted a multi-dimensional assessment of the online teaching model, covering four core indicators: utility, feasibility, suitability, and accuracy. Evaluation results, verification of the accuracy of the verification possibility by 12 Expert.

Table 1 Evaluation of The Model Results N=12

Content	Utility		Feasibility		Proprietary		Accuracy	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
How do you evaluate the structure of the professional stratified teaching in the model?	12	100.00	12	100.00	12	100.00	12	100.00
How do you evaluate the structure of the grade-flexible learning design in the model?	12	100.00	12	100.00	12	100.00	11	91.67
How do you evaluate the enhancement effect of the technical infrastructure on students' learning motivation?	10	83.33	12	100.00	11	91.67	11	91.67
How do you evaluate the enhancement effect of the teacher training and evaluation system on students' learning motivation?	12	100.00	11	91.67	12	100.00	10	83.33
How do you evaluate the enhancement effect of the curriculum reform on students' learning motivation?	12	100.00	11	91.67	12	100.00	10	83.33
How do you evaluate the effect of teachers reshaping their role positioning on teaching methods?	11	91.67	11	91.67	12	100.00	10	83.33
How do you evaluate the effect of teachers empowering students on teaching methods?	12	100.00	12	100.00	12	100.00	12	100.00

How do you evaluate the effect of teachers making good use of technical data on teaching methods?	10	83.33	11	91.67	12	100.00	11	91.67
How do you evaluate the effect of technicians on pursuing user experience?	12	100.00	12	91.67	12	91.67	11	91.67
How do you evaluate the effect of technicians on skill assessment?	11	91.67	11	91.67	12	100.00	12	100.00
How do you evaluate the effect of feeding back knowledge potential on the dynamic transformation of "behavior-knowledge-skills"?	10	83.33	11	91.67	10	83.33	10	83.33
How do you evaluate the effect of the dual engine of learning behavior on the dynamic transformation of "behavior-knowledge-skills"?	11	91.67	12	100.00	12	100.00	11	91.67

This model is a clear-structured, highly feasible and highly applicable online teaching optimization framework. It has received high praise from experts in areas such as teaching organization, teacher empowerment, and technical support. Its main advantages lie in its systematic multi-level design and high potential for implementation. The evaluation also pointed out that the direct driving effect of technical facilities on motivation, as well as the theoretical rigor and operational accuracy of the "behavior-knowledge-skills" transformation mechanism (especially the "feedback of knowledge" stage), are the relatively weak links of the current model. It is suggested that in subsequent iterations, these aspects should be prioritized for refinement and enhancement.

Conclusion

This Research The researcher can summarize the results of the research study according to the following objectives

1. Result of studying online teaching and active learning skills of vocational students in Chongqing city, China.



This study analyzed the structure of online teaching participation and found that it was generally distributed in a spindle shape, indicating a healthy overall participation situation, but there were differences in terms of major and grade. The online participation in engineering and art design majors was relatively low, and the risk of “weak practice” should be guarded against. Sophomore students are more suitable for the mixed model of “online theory + offline tutoring”, while junior students need flexible learning design. The cross-analysis of gender and major showed that girls were more inclined to structured learning, while boys preferred autonomous exploration. Based on the analysis of questionnaire data, it was revealed that the technical platform support was the core factor driving active learning, knowledge acquisition and skill improvement; the learning environment and external support played a catalytic role; teacher support had a significant promoting effect on the transformation of knowledge to skills.

The study also revealed the dynamic cyclic mechanism among the three-dimensional variables of “behavior - knowledge – skill”: active learning behavior was the core engine for skill improvement, skills could directly catalyze or be transformed into a dual path through knowledge to form a double path, and skills also had a feedback effect on knowledge; this mechanism has been underestimated at present. The results showed that online teaching needs to be systematically optimized to promote the deep learning cycle of “knowledge and action integration”.

2. Result of creating the model of online teaching and active learning skills of vocational students in Chongqing city, China.

The results of the semi-structured interview assessment. Through 12 experts conducting semi-structured interviews, the Chongqing model for educational digital transformation was derived, which includes lightweight guaranteeing the bottom line of fairness, human-machine dual-track driving the efficiency revolution, and local creation activating local wisdom. This model is a clearly structured, highly feasible, and highly applicable online teaching optimization framework. It has received high praise from experts in terms of teaching organization, teacher empowerment, and technical support. Its main advantages lie in its systematic multi-level design and high potential for implementation. The assessment also pointed out that the direct driving effect of technical facilities on motivation and the theoretical rigor and operational accuracy of the “behavior-knowledge-skills” transformation mechanism (especially the “feedback knowledge” stage) are the relatively weak links of the current model. It is recommended to prioritize the refinement and enhancement of these aspects in subsequent iterations. In summary, it is necessary to unite the efforts of the education theory, teaching practice, and technology platform to build an efficient, fair, and sustainable new online education ecosystem.



3. Result of evaluate the model of online teaching and active learning skills of vocational students in Chongqing city, China.

The expert team evaluated the online teaching model from four dimensions: purpose, feasibility, applicability and accuracy. The overall recognition rate was high, especially in terms of feasibility and applicability, indicating that the model design was in line with reality and easy to implement. The optimization of the online teaching structure received high praise, and multiple indicators received full marks. In terms of enhancing learning motivation, “teacher training and evaluation system reform” and “course reform” received full marks in terms of purpose and applicability, but there was room for improvement in accuracy and feasibility; “technical infrastructure” received full marks in terms of feasibility, but the scores for purpose and accuracy were lower, indicating doubts about the effectiveness of the motivation enhancement; “teacher empowerment of students” received full marks in the teaching methods; “role redefinition” and “effective use of technology” received slightly lower scores in terms of accuracy and feasibility, and the sustainability of practical operation needs to be strengthened. The overall evaluation of the technical staff’s functional design was good, but experts still had concerns about the implementation comprehensiveness of “user experience”. The “dynamic transformation mechanism of behavior-knowledge-skills” was a weak link, with insufficient clarity in theoretical construction and implementation path; “learning behavior dual engines” received full marks in terms of feasibility and applicability, but the scores for purpose and accuracy were slightly lower, and the mechanism value needs to be further verified.

Discussion

This Research The researcher can discuss the research results as follows

1. Discussion for studying online teaching and active learning skills of vocational students in Chongqing city China. The discussion results indicate that current online teaching needs to shift from “scale coverage” to “precise empowerment”, focusing on activating students' intrinsic learning motivation and behavior, strengthening the “behavior-knowledge-skills” transformation loop, and particularly emphasizing the integration of practical teaching with real enterprise scenarios, in order to break through the bottleneck of skill cultivation and achieve true capability generation. These issues not only stem from the objective differences among different majors, grades, and groups, but also reveal the systematic deficiencies in the current online teaching system in terms of “practical teaching mechanism” “self-study ability cultivation” “depth of industry-academia integration” and “evaluation system completeness”. Future reforms should start from these deep causes for precise intervention. current online teaching needs to shift from "scale coverage" to "precise empowerment",



focusing on activating students' internal learning motivation and behavior, strengthening the "behavior - knowledge - skills" transformation closed loop, especially emphasizing the integration of practical teaching and real enterprise scenarios to break through the bottleneck of skill cultivation and achieve true ability generation.

2. Discussion for creating the model of online teaching and active learning skills of vocational students in Chongqing city China. Through the of research, it can be found that the construction of the online teaching model for higher vocational education in Chongqing has sufficient theoretical basis and practical relevance. At the structural level, an elastic teaching organization mechanism that matches the professional attributes and grade characteristics must be established. In terms of the driving mechanism, the key lies in stimulating students' internal motivation and autonomous learning ability, and forming an internal and external collaborative continuous learning mechanism. At the role transformation level, digital transformation requires teachers to transform from knowledge transmitters to learning designers and skill coaches, while technicians need to shift from technical support to educational services, and empower teaching innovation with intelligent tools and data. At the mechanism innovation level, through innovating the evaluation system and establishing an "experience knowledgeization" path, the effective transformation of knowledge to ability can be promoted. This model is a comprehensive response from four dimensions: structural adaptation, motivational reconfiguration, role transformation, and mechanism innovation, to the systematic challenges of higher vocational online education, aiming to promote the paradigm shift from "scale coverage" to "precise empowerment".

3. Discussion for evaluating the model of online teaching and active learning skills of vocational students in Chongqing city China. This model is highly systematic and has a clear structure. It has significant advantages in aspects such as teaching organization, teacher development, and technical support, and can serve as an important framework for optimizing online teaching in higher vocational education. The model's advantages stem from its accurate grasp of the structural characteristics of higher vocational education and the demands for role transformation. The weak points reveal the complexity of the integration of technology and education as well as the lag in the reform of the evaluation mechanism. Research shows that the sources of students in higher vocational colleges are complex, and there are significant differences in students' cultural background, learning habits, and motivation. Higher vocational education emphasizes that teachers should transform from "knowledge transmitters" to "learning designers" and "skill coaches", which is in line with the current direction of higher vocational education reform. Existing platforms are difficult to support effective group communication and comments, resulting in low interaction quality. Teachers lack the ability to apply information technology, making it difficult for them to effectively utilize technological tools to stimulate students' motivation. This



model is highly systematic and has a clear structure. It has significant advantages in teaching organization, teacher development, and technical support, and can be used as an important framework for optimizing online teaching in higher vocational education. Future iterations should focus on improving the precise alignment of technical support and motivation stimulation, and deepening the theoretical basis and practical mechanism of "knowledge feedback", to comprehensively enhance the scientific and effectiveness of the model.

Suggestion

1. Suggestions for use

1.1 achieve precise three-dimensional adaptation. Professional stratification, for the management, economics, and healthcare fields, implement full-process online certification (the ratio of theory to practice is 8:2); for the engineering and art fields, adopt a "dual-track credit system", with high online participants subject to mandatory offline verification; grade flexibility, for sophomore students "3 days online + 2 days offline" mixed system; for junior students "credit bank" (1-month internship = 0.5 credit) + late-night resource library; gender design, for female students, use the "calendar progress wall" for structured learning, for male students, use the "skill challenge map" to explore enterprise projects.

1.2 dynamic transformation and reinforcement. Skills feedback knowledge, 30% of skill micro-lessons are converted into theoretical cases, typical mistakes are included in the question bank; dual engines for behavior, AR failure library for immediate training + learning contract gold incentive; practical guarantee, mobile VR training vehicles cover 100,000 students annually, and schools and enterprises share production lines. technological ecosystem upgrade. Mountain-specific needs, 5G weak network streaming media (<1MB/min) combined with local cache beacons; three-layer penetration of education and industry, enterprise projects account for class time greater than or equal to 30%, mentor ratings account for 50% of skill exams, award "Chongqing Intelligent Manufacturing" badges; human-machine collaboration, teachers focus on 30% high-value intervention, AI takes on 70% standardized training.

2. Suggestions for next research

2.1 Research on the Reconstruction of Online Teaching Mode for Higher Vocational Education Driven by Artificial Intelligence and the Path for Active Skill Acquisition

2.2 Research on the Construction of Immersive Training Environment Based on VR/AR and Its Impact on the Active Acquisition of Practical Skills by Higher Vocational Students

2.3 Research on the Analysis of Online Learning Behaviors in Higher Vocational Education from the Perspective of Data Empowerment and the Development of Personalized Skill Enhancement Models



2.4 Research on Learning Behavior Analysis Driven by Multimodal Data and the Intervention Mechanism for Skill Formation

2.5 Research on the Enhancement of Digital Intelligence Teacher Competence and the Construction of a Research and Teaching Innovation Community

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